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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/771,158      | 02/04/2004  | Hiroshi Kawazoe      | 04012               | 9121             |

7590 09/30/2004

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EXAMINER

KIM, CHRISTOPHER S

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

3752

DATE MAILED: 09/30/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                                |                                |  |
|------------------------------|--------------------------------|--------------------------------|--|
| <b>Office Action Summary</b> | Application No.<br>10/771,158  | Applicant(s)<br>KAWAZOE ET AL. |  |
|                              | Examiner<br>Christopher S. Kim | Art Unit<br>3752               |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2004.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |   |   |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)  | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>2/4/04</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Drawings*

1. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the "jet opening downstream channel has a region in which its diameter is substantially double the diameter of the jet opening" recited in claim 3 and similarly recited in claims 6-9 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites the limitation "the diameter" in line 10. There is insufficient antecedent basis for this limitation in the claim.

Claim 3 recites "its diameter" in line 1. It appears to be a double inclusion of the "diameter of the jet opening downstream channel" recited in claim 1.

Claim 3 recites the limitation "the diameter" in line 2. There is insufficient antecedent basis for this limitation in the claim.

Claim 4 recites the limitation "the diameter" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 6 recites the limitation "the diameter" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 7 recites the limitation "the diameter" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 8 recites the limitation "the diameter" in line 4. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites the limitation "the region" in line 3. There is insufficient antecedent basis for this limitation in the claim.

Claim 9 recites the limitation "the diameter" in lines 4-5. There is insufficient antecedent basis for this limitation in the claim.

In claim 9, the recitation "ensuring satisfactory diffusion" in line 10 is a subjective standard. The metes and bounds of the claim cannot be determined.

### ***Claim Rejections - 35 USC § 102***

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

5. Claims 1-4, 7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Winter (5,314,122).

Winter discloses a fuel injector comprising: a fuel passage 4; a valve 15; a valve seat 8; a jet opening 9; a jet opening downstream channel 11.

6. Claims 1-6, 7 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Huang et al. (5,054,691).

Huang discloses a fuel injector comprising: a fuel passage 9; a valve 11; a valve seat 31, 32; a jet opening 34; a jet opening downstream channel 121.

7. Claims 1, 2, 5 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Ricco (6,059,205).

Ricco discloses a fuel injector comprising: a fuel passage 32; a valve 48; a valve seat 50; a jet opening 44; a jet opening downstream channel 38,36.

***Claim Rejections - 35 USC § 103***

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 3, 4, 7-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ricco (6,059,205).

Ricco discloses the limitations of the claimed invention with the exception of the jet opening downstream channel 38 diameter being double the jet opening 44 diameter. Ricco discloses, in column 2, lines 50-52, that control chamber 38 has a calibrated discharge conduit 44. Doubling the diameter of chamber 38 to that of conduit 44 is a mere optimization of workable parameters. It would have been obvious to one having ordinary skill in the art at the time the invention was made to doubled the diameter of chamber 38 to that of opening 44, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

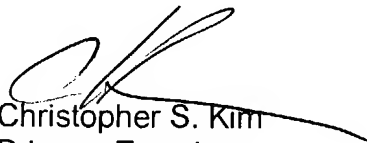
***Conclusion***

Art Unit: 3752

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher S. Kim whose telephone number is (703) 308-8336. The examiner can normally be reached on Monday - Thursday, 6:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Y. Mar can be reached on (703) 308-2087. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
Christopher S. Kim  
Primary Examiner  
Art Unit 3752

CK